UNITED STATES GEOLOGICAL SURVEY

BULLETIN GW—53 PLATE I
NEW YORK WATER RESOURCES COMMISSION

MAP SHOWING THE LOCATION OF WELLS AND SPRINGS IN THE IMMEDIATE VICINITY OF NIAGARA FALLS, N. Y.

EXPLANATION

● WELL IN BEDROCK

○ WELL IN UNCONSOLIDATED DEPOSITS

SPRING (SOURCE IS BEDROCK)

\+ TEST HOLE, POINT OF GEOLOGICAL OBSERVATION, OR POINT OF COLLECTION OF WATER SAMPLE FROM EXCAVATION

2, b NUMBER IS LAST DIGIT OF WELL OR SPRING NUMBER; LETTER IS LAST PART OF TEST-HOLE DESIGNATION. (SEE "WELL-NUMBERING SYSTEM" IN TEXT FOR EXPLANATION)

SCALE 0 1/2 1 MILE

PUMPED-STORAGE RESERVOIR NIAGARA POWER PROJECT

904 903 902 901 900 859 858 857

310 309 308 307 306 305 304

UNITED STATES GEOLOGICAL SURVEY

BULLETIN GW–53 PLATE 2
NEW YORK WATER RESOURCES COMMISSION

EXPLANATION

PRINCIPAL WATER-BEARING UNITS

SAND AND GRAVEL

YIELD OF WELLS PROBABLY VARIES FROM 1 TO 200 GPM BASED ON INFORMATION FROM SIMILAR DEPOSITS TO THE EAST. THINNESS OF DEPOSITS AND OCCURRENCE AS TOPOGRAPHIC HIGHS PRECLUDE DEVELOPMENT OF LARGE SUPPLIES.

LOCKPORT DOLOMITE

(AREA OF POTENTIAL RIVER INFILTRATION)

YIELD OF WELLS VARIES FROM 50 TO 2,200 GPM AND AVERAGES 950 GPM. HIGHEST YIELDS ARE OBTAINED IN AREA BOUNDED TO NORTHWEST AND SOUTHEAST BY HEAVY BLUE LINES. AVERAGE HARDNESS IS 200 PPM.

UPPER AND MIDDLE PARTS OF LOCKPORT DOLOMITE

YIELD OF WELLS VARIES FROM 2 TO 110 GPM AND AVERAGES 35 GPM. WATER OCCURS PRINCIPALLY IN 7 OR 8 WATER-BEARING ZONES PARALLEL TO BEDDING. AVERAGE HARDNESS IS 1,000 PPM. ONE-THIRD OF WELLS YIELD SULFUROUS WATER.

LOWER PART OF LOCKPORT DOLOMITE

YIELD OF WELLS VARIES FROM 1/2 TO 20 GPM AND AVERAGES 7 GPM. WATER OCCURS PRINCIPALLY IN 3 WATER-BEARING ZONES PARALLEL TO BEDDING. THESE ZONES ARE LESS PERMEABLE THAN THOSE IN THE UPPER AND MIDDLE PARTS OF THE LOCKPORT. QUALITY IS SIMILAR TO THAT OF UPPER AND MIDDLE PARTS OF THE LOCKPORT.

CLINTON AND ALBION GROUPS

YIELD OF WELLS VARIES FROM 1/2 TO 5 GPM. GROUND WATER OCCURS PRINCIPALLY IN LIMESTONES AND DOLOMITES OF CLINTON GROUP AND SANDSTONES AT BASE OF ALBION GROUP. WATER IS VERY HARD; SALTY WATER IS FOUND IN A FEW WELLS.

QUEENSTON SHALE

AVERAGE YIELD OF ADEQUATE WELLS IS 7 GPM. MANY WELLS HAVE BEEN ABANDONED BECAUSE OF POOR QUALITY AND INADEQUATE YIELDS. GROUND WATER OCCURS PRINCIPALLY IN FRACTURED ZONE IN TOP 1 FOOT OF SHALE. WATER IS VERY HARD, AND LOCALLY SALTY. WELLS IN OVERLYING GLACIAL TILL AND LAKE DEPOSITS YIELD LITTLE WATER AND ARE ADEQUATE ONLY WHEN SAND BEDS OR A "WASHED ZONE" AT TOP OF ROCK IS PENETRATED.

SYMBOLS

WELL IN BEDROCK

SPRING (SOURCE IS BEDROCK)

60 — ISOPACH LINE SHOWING THICKNESS, IN FEET, OF PRINCIPAL AQUIFER, THE LOCKPORT DOLOMITE (DASHED WHERE INFERRED).

WELL YIELDING WATER CONTAINING HYDROGEN SULFIDE IN NOTICEABLE AMOUNTS.

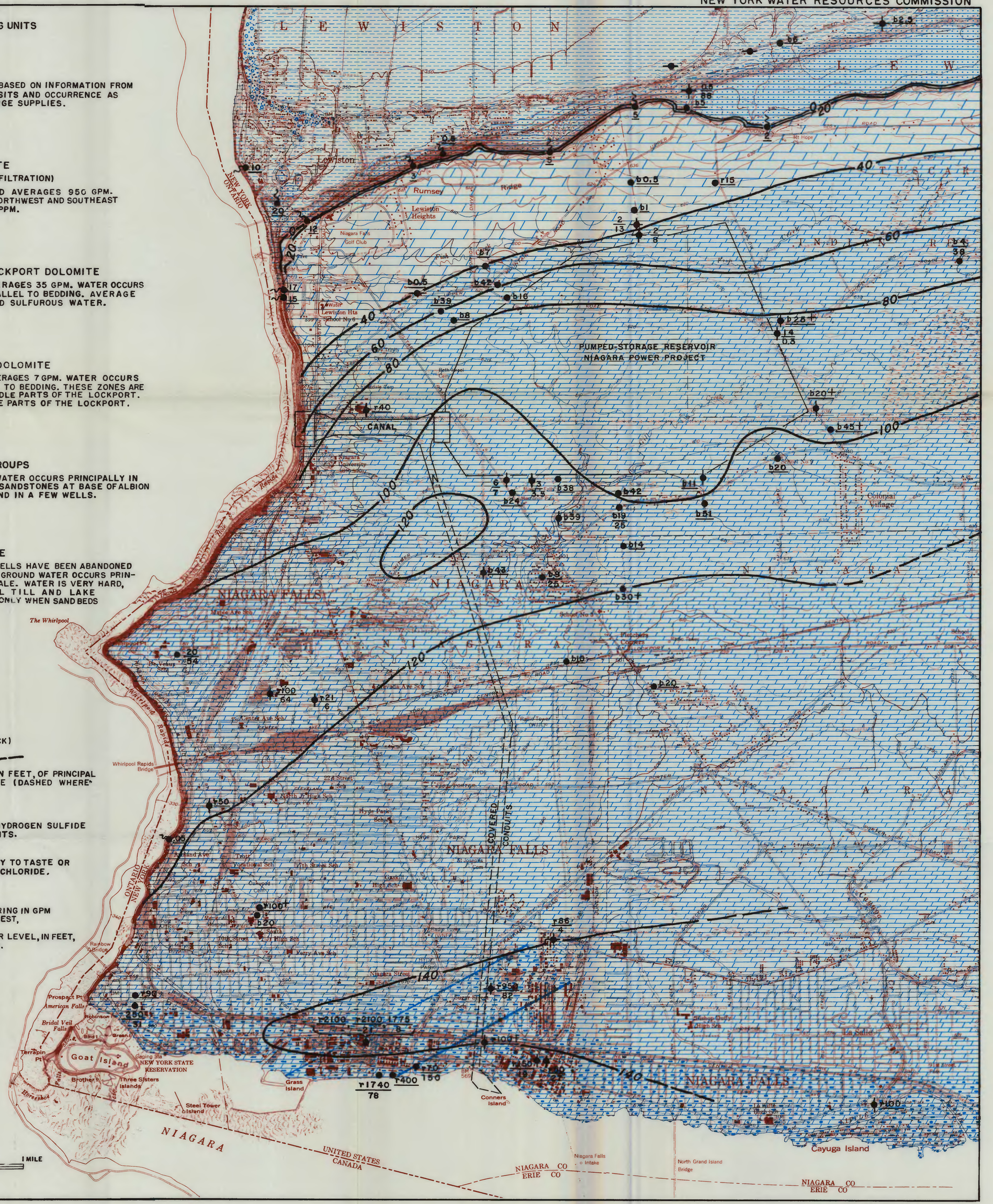
WELL YIELDING WATER EITHER SALTY TO TASTE OR CONTAINING MORE THAN 500 PPM CHLORIDE.

150/19 — UPPER FIGURE IS YIELD OF WELL OR SPRING IN GPM (b INDICATES YIELD FROM BAILING TEST, r INDICATES REPORTED YIELD). LOWER FIGURE IS DRAWDOWN OF WATER LEVEL, IN FEET, REQUIRED TO OBTAIN STATED YIELD.

N

SCALE

0 1/2 1 MILE



MAP SHOWING THE AVAILABILITY OF GROUND WATER IN THE IMMEDIATE VICINITY OF NIAGARA FALLS, N.Y.

EXPLANATION

PRINCIPAL WATER-BEARING UNITS

SAND AND GRAVEL

YIELD OF WELLS VARIES FROM LESS THAN 1 TO 200 GPM. THINNESS OF DEPOSITS AND OCCURRENCE AS TOPOGRAPHIC HIGHS PRECLUDE DEVELOPMENT OF LARGE SUPPLIES. WATER IS HARD BUT NOT SALTY OR SULFUROUS.

LOCKPORT DOLOMITE

YIELD OF WELLS VARIES FROM 1/2 TO OVER 100 GPM AND AVERAGES 30 GPM EXCEPT IN A NARROW AREA ALONG THE NIAGARA RIVER WHERE LARGE SUPPLIES ARE OBTAINED BY INDUCING INFILTRATION FROM THE RIVER. (SEE PLATE 2.) WATER OCCURS PRINCIPALLY IN WATER-BEARING ZONES PARALLEL TO BEDDING. AVERAGE HARDNESS IS 1,000 PPM. ONE-THIRD OF WELLS YIELD SULFUROUS WATER.

CLINTON AND ALBION GROUPS

YIELD OF WELLS VARIES FROM 1/2 to 5 GPM. GROUND WATER OCCURS PRINCIPALLY IN LIMESTONES AND DOLOMITES OF CLINTON GROUP AND SANDSTONES AT BASE OF ALBION GROUP. WATER IS VERY HARD; SALTY WATER IS FOUND IN A FEW WELLS.

QUEENSTON SHALE

AVERAGE YIELD OF ADEQUATE WELLS IS 7 GPM. MANY WELLS HAVE BEEN ABANDONED BECAUSE OF POOR QUALITY AND INADEQUATE YIELDS. GROUND WATER OCCURS PRINCIPALLY IN FRACTURED ZONE IN TOP 1 FOOT OF SHALE. WATER IS VERY HARD AND ONE-THIRD OF WELLS YIELD SALTY WATER. WELLS IN OVERLYING GLACIAL TILL AND LAKE DEPOSITS YIELD LITTLE WATER AND ARE ADEQUATE ONLY WHEN SAND BEDS OR A "WASHED ZONE" AT TOP OF ROCK IS PENETRATED.

SYMBOLS

- WELL IN BEDROCK
- WELL IN UNCONSOLIDATED DEPOSITS
- SPRING (SOURCE IS BEDROCK)
- WELL YIELDING WATER CONTAINING HYDROGEN SULFIDE IN NOTICEABLE AMOUNTS
- WELL YIELDING WATER EITHER SALTY TO TASTE OR CONTAINING MORE THAN 500 PPM CHLORIDE

1 b13/16 — 1—LAST DIGIT OF WELL OR SPRING NUMBER. SEE "WELL-NUMBERING SYSTEM" IN TEXT FOR EXPLANATION
b13—YIELD OF WELL IN GPM (b INDICATES YIELD FROM BAILING TEST, e INDICATES ESTIMATED YIELD, r INDICATES REPORTED YIELD).
16—DRAWDOWN OF WATER LEVEL, IN FEET, REQUIRED TO OBTAIN STATED YIELD.

+d — TEST HOLE. LETTER IS LAST PART OF TEST-HOLE DESIGNATION. SEE "WELL NUMBERING SYSTEM" IN TEXT FOR EXPLANATION.

MAP SHOWING THE LOCATION OF WELLS AND SPRINGS AND THE AVAILABILITY OF GROUND WATER IN THE NIAGARA FALLS, N.Y. AREA

SCALE
1 0 1 2 3 4 Miles

GEOLOGIC CONTACTS IN PART BASED ON GEOLOGIC MAP OF NEW YORK BY FISHER AND OTHERS (1962) AND U.S. GEOLOGICAL SURVEY NIAGARA FOLIO BY KINDLE AND TAYLOR (1913)